

CLAIMS

1. A longitudinal drawing device for synthetic films, of the double drawing stage device kind, with drawing cylinders and press elements, particularly press cylinders, associated with the drawing cylinders, characterized in that it comprises four drawing cylinders (6, 7, 8, 9) over which the film (5) that is to be drawn passes in succession, with a first drawing cylinder (6), particularly of fixed axle (10), a second drawing cylinder (7) the axle (12) of which is offset forward and vertically with respect to the axle (10) of the first drawing cylinder (6), a third drawing cylinder (8) the axle (17) of which is offset forward and vertically with respect to the axle (10) of the second drawing cylinder (7), and a fourth drawing cylinder (9) the axle (25) of which is offset forward and vertically with respect to the axle (17) of the third drawing cylinder (8), the device (2) also comprising motorized means for the rotational drive of all or some of the drawing cylinders (6, 7, 8, 9), at differentiated speeds, so as to form a first drawing stage between the second cylinder (7) and the third cylinder (8) and so as to form a second drawing stage between the third cylinder (8) and the fourth cylinder (9), the drawing of the film (5) thus occurring on each side of the third cylinder (8).

2. The longitudinal drawing device as claimed in claim 1, characterized in that the first drawing cylinder (6) and the second drawing cylinder (7) have fixed respective axles (10, 12), whereas the third drawing cylinder (8) has a position-adjustable axle (17) so as to regulate the drawing distance (d, D) in the first drawing stage formed between the second cylinder (7) and the third cylinder (8).

3. The longitudinal drawing device as claimed in

claim 2, characterized in that the third drawing cylinder (8) is mounted on a mobile coupling (18), in particular articulated (at 19) to the frame (11) of the device (2), motorized means such as at least one ram
5 (20) being provided for moving the mobile coupling (18) with a view to regulating the drawing distance (d, D) in the first drawing stage.

4. The longitudinal drawing device as claimed in
10 claim 3, characterized in that press elements, such as press cylinders (13, 21, 26), are associated at least with the second drawing cylinder (7), with the third drawing cylinder (8) and with the fourth drawing cylinder (9), the press element (21) associated with
15 the third drawing cylinder (8) being supported by the mobile coupling (18) so as to accompany this third drawing cylinder (8) in its regulating movements.

5. The longitudinal drawing device as claimed in any
20 one of claims 1 to 4, characterized in that the fourth drawing cylinder (9) has a fixed axle (25), particularly when situated at the same height as the axle (12) of the second drawing cylinder (7).

25 6. The longitudinal drawing device as claimed in any one of claims 1 to 4, characterized in that the fourth drawing cylinder (9) has a position-adjustable axle (25), for example mounted on a mobile coupling, so as to regulate the drawing distance in the second drawing
30 stage formed by the third cylinder (8) and the fourth cylinder (9).

7. The longitudinal drawing device as claimed in any one of claims 1 to 6, characterized in that the
35 motorized rotational-drive means are designed to drive the first drawing cylinder (6) and the second drawing cylinder (7) in synchronism or almost in synchronism, that is to say with a slightly higher speed for the second cylinder (7).

8. The longitudinal drawing device as claimed in claim 7, characterized in that the motorized rotational-drive means are designed to positively drive the four drawing cylinders (6, 7, 8, 9), the third drawing cylinder (8) being driven at a speed higher than that of the second cylinder (7) and defining the draw ratio in the first drawing stage, and the fourth drawing cylinder (9) being driven at a speed higher than that of the third drawing cylinder (8) and defining the draw ratio in the second drawing stage.

9. The longitudinal drawing device as claimed in claim 7, characterized in that the motorized rotational-drive means are designed to positively turn only the first drawing cylinder (6), the second drawing cylinder (7) and the fourth drawing cylinder (9) while the third drawing cylinder (8) turns driven by the film (5) at a speed someway between that of the second cylinder (7) and that of the fourth cylinder (8).

10. The longitudinal drawing device as claimed in any one of claims 1 to 9, characterized in that the press elements all consist of press cylinders (13, 21, 26) pressed against the associated drawing cylinders (7, 8, 9) at the points of tangency of the film (5) or close to these points of tangency.

11. The longitudinal drawing device as claimed in any one of claims 1 to 9, characterized in that the press element associated with the third drawing cylinder (8) consists of an electrostatic close application system, preferably of the belt type.